



October 2007

PILOT USE LEVEL DESIGNATION FOR OIL TREATMENT

For

Royal Environmental Systems, Inc. ecoSep™

Ecology's Decision:

Based on Royal Environmental's application submissions and recommendations by the Technical Review Committee (TRC), Ecology hereby issues a pilot use level designation (PLD) for the ecoSep™:

- As an oil treatment option sized according to Table 1 below:

ecoSep™ Model	Max. Flow (gpm)
50	50
160	160
320	320

The use level designation expires April 30, 2011 unless extended by Ecology, and is subject to the conditions specified below.

Ecology's Conditions of Use:

ecoSep™ units shall be designed, installed, and maintained to comply with these conditions:

1. ecoSep™ units must be designed, assembled, installed, operated, and maintained in accordance with Royal Environmental Systems Inc.'s applicable manuals and documents and the Ecology Decision. Ecology recommends the inspection and maintenance schedule included here:

[Inspection and Maintenance Checklist](#)

2. ecoSep™ units using the 100mm coalescing material are approved for treatment at the maximum flowrates shown in Table 1 above at the 15-minute water quality design flow rate (as specified in Ecology's most recent Stormwater Manual), as calculated using the latest version of the Western Washington Hydrology Model or other Ecology-approved

continuous runoff model. Note that if single event methods are used to estimate runoff flowrates, Figures 9.6a and 9.6b of the 2005 Stormwater Management Manual for Western Washington should be used to adjust the approved maximum flowrate for calculation purposes. (Note: Ecology is not approving a higher flowrate per unit for jurisdictions using single event methods. The adjustment is for calculation purposes only, and is intended to yield the same design result as the continuous runoff modeling approach.) This is done by multiplying the above maximum flowrate by the ratio indicated in Figure 9.6a for on-line designs, or Figure 9.6b for off-line designs. The 6-month, 24-hour rainfall amount for the project site must be known to identify the appropriate ratio. The adjusted maximum flowrate is divided into the peak 10-minute flowrate predicted by the single event method to compute the applicable model. Note: This method is not applicable for Eastern Washington.

3. Royal Environmental Systems Inc. commits to submitting a QAPP for TRC review and Ecology approval by April 30, 2008 that meets the TAPE requirements for attaining a GULD for oil treatment. Additional QAPPs must be reviewed and approved by the TRC and Ecology for each field site in Washington State. The sites chosen should be reflective of the product's treatment intent.
4. Local jurisdictions must file a "Pilot Level Technologies Notice of Intent" form with the Department of Ecology prior to authorizing ecoSep™ for a pilot use level application.
5. Royal Environmental Systems Inc. shall complete all required testing and submit a TEER for TRC and Ecology review by October 31, 2010.
6. Royal Environmental Systems Inc. may request Ecology to grant deadline or expiration date extensions, upon showing cause for such extensions.
7. Discharges from the ecoSep™ units shall not cause or contribute to water quality standards violations in receiving waters.

Applicant: Royal Environmental Systems Inc.

Applicant's Address: 30622 Forest Blvd, PO Box 430
Stacy, MN, 55079

Application Documents:

- ecoSep™ Oil-Water separator and ecoStop™ Spill control system Testing Summary (June 2001)
- LGA Test Certification – Nr. 4950235-03-Translation
- "Installation for separation of light liquids – Part I: Principles of design – Performance and testing – Marking and quality control", European Standard, 1992

Applicant's Use Level Request:

- Pilot use level designation as an oil treatment device in accordance with Ecology's 2005 Western Washington Stormwater Manual.

Applicant's Performance Claims:

- The ecoSep™ oil/water separator is designed to capture free oil with a specific gravity up to 0.95 and will remove hydrocarbons to an effluent total hydrocarbon concentration less than 10 ppm.

Technical Review Committee's Recommendations:

The TRC finds that:

- Royal Environmental Systems Inc. should be given the opportunity to demonstrate, through additional laboratory and field testing, whether the ecoSep™ system can attain Ecology's oil treatment goals.

Findings of Fact:

- Laboratory testing was conducted on a model 50 unit with a flowrate of 50 GPM using both the 100 and 150 mm thick coalescing material. Tests were conducted with oil having a specific gravity of 0.85. Influent concentrations were targeted at 5000ppm and effluent values ranged from 3.8 to 4.2 mg/L for the 100 mm material and 3.0 to 3.7 mg/L for the 150 mm material.
- Laboratory testing was conducted on a model 160 unit with a flowrate of 160 GPM using both the 100 and 150 mm thick coalescing material. Tests were conducted with oil having a specific gravity of 0.85. Influent concentrations were targeted at 5000ppm and effluent values ranged from 4.0 to 4.8 mg/L for the 100 mm material and 2.2 to 2.9 mg/L for the 150 mm material.

Other ecoSep™ Related Issues to be Addressed By the Company:

1. No complete field test results are available, so it is unknown whether the ecoSep™ system can reliably attain to oil removal goals of no ongoing or recurring visible sheen and have a 24-hour average total petroleum hydrocarbon (TPH) concentration no greater than 10 mg/L, and a maximum of 15 mg/L for a discrete sample.

2. The system should be tested under normal operating conditions, such that the settling basin is partially filled with pollutants. Results obtained for “clean” systems may not be representative of typical performance.
3. Field testing should be conducted at sites that are indicative of the treatment goals.
4. Testing should be conducted to obtain information about maintenance requirements in order to come up with a maintenance cycle.
5. Testing should be conducted on lower influent concentrations that are more typical of parking lots, residential streets, and commercial sites.

Technology Description: Download at www.royalenterprises.net

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